AMENDMENTS TO THE CLAIMS

1. (Previously presented) A computer-implemented method for trading in a financial derivative of an underlying asset, comprising:

determining a trend of a stochastic process, which is predictive of a future value of the asset and a predicted variance of the future value;

using a computer-to calculate a density function indicative of a probability distribution of the value at a first time in the future responsive to the trend and the variance;

calculating a second density function based on the first density function at the first time, by integrating a random variable representative of the stochastic process over the first density function at the first time to find the probability distribution of the value at a second time, subsequent to the first time, wherein the random variable has a plurality of discrete values with a normal probability distribution and the random variable comprises a convex superposition of mutually-translated delta functions comprising at least the following formula:

$$\Delta(z) = \sum_{r=1}^{m} \alpha_r \delta(z - z_m)$$

computing at least one of an expected value of the asset and an expected yield of the financial derivative based on the second density function as a basis for making a trading decision with regard to the derivative of the asset.

2-5. (Cancelled)

6. (Previously presented) A method according to claim 1, wherein integrating the random variable comprises computing an integrated value of the density function at each of a

plurality of grid points in a coordinate space, wherein the value of the asset is represented by a coordinate in the space.

7. (Original) A method according to claim 6, wherein computing the integrated value comprises, for each of the plurality of grid points:

finding one or more corresponding points in the coordinate space at the first time, such that in a time step from the first time to the second time, the random variable makes a transition from the one or more corresponding points to the grid point at the second time; and

determining the function at the grid point at the second time by summing over the density function at the corresponding points.

8. (Original) A method according to claim 6, wherein recalculating the density function comprises interpolating the density function intermediate the grid points so as generate a smooth function over a selected range of calculation.

9. (Original) A method according to claim 8, wherein computing the integrated value comprises computing the value and a first derivative of the density function at the second time, and wherein interpolating the density function comprises fitting polynomial functions between the grid points so as to match the value and the first derivative of the density function computed at each of the grid points.

10. (Original) A method according to claim 9, and comprising recalculating the density function at a third time, subsequent to the second time, using the polynomial functions fitted between the grid points at the second time.

11. (Original) A method according to claim 1, wherein recalculating the density function comprises iteratively recalculating the density function at each of a plurality of times from the first time up to a final time.

12. (Previously presented) A method according to claim 1, wherein determining the trend comprises defining a vector having elements that comprise a plurality of related variables that include the value of the asset, and finding a multivariate trend with respect to the plurality of related variables by modeling a change in the vector over time as a multidimensional Wiener process.

13. (Previously presented) A method according to claim 12, and comprising finding a covariance matrix with respect to the plurality of related variables, wherein computing the density function comprises applying the covariance matrix in calculating the probability distribution of the future value of the asset.

14. (Original) A method according to claim 12, wherein the density function comprises a multivariate function, based on at least some of the plurality of related variables, in a multidimensional coordinate space.

15-16. (Canceled)

17. (Original) A method according to claim 1, wherein making the trading decision comprises deciding whether to carry out a transaction in the financial derivative at a given transaction price.

18. (Original) A method according to claim 1, wherein the financial derivative comprises an option exercisable at any of a plurality of points in time, and wherein making the trading decision comprises determining at which of the points to exercise the option.

19. (Previously presented) A method according to claim 18, wherein determining at which of the points to exercise the option comprises calculating a strategy function that is indicative of an expected value of a yield of the option, and deciding whether to exercise the option by

comparing a current value of the asset to the expected value of the yield at one or more of the points in time.

20. (Previously presented) A method according to claim 1, wherein the derivative comprises a path-dependent option, and wherein recalculating the density function comprises computing a cumulative density function by integrating the density function over time.

21. (Original) A method according to claim 20, wherein computing the path-dependent density function comprises finding a cumulative density function indicative of a path-dependent probability distribution of a value of the option.

22-48. Cancelled.